

# PATENT ABSTRACTS OF JAPAN

(11)Publication number : 63-222420

(43)Date of publication of application : 16.09.1988

(51)Int.Cl. H01L 21/205

(21)Application number : 62-055172 (71)Applicant : NEC CORP

(22)Date of filing : 12.03.1987 (72)Inventor : USUI AKIRA

## (54) EPITAXIAL GROWTH METHOD FOR ATOMIC LAYER OF III-V COMPOUND SEMICONDUCTOR

### (57)Abstract:

**PURPOSE:** To make it possible to grow high quality regular mixed crystals and a superlattice structure, by forming a group III element absorbing layer on a substrate crystal, then repeating the supplying process of a group VI element for a specified time, and thereafter supplying the chlorides of a group V element and a group III element alternately.

**CONSTITUTION:** A substrate crystal 6 is put in a reaction chamber 5. The growing temperature is increased in a PH<sub>3</sub> stream. HCl is supplied in the reaction chamber 3. After a specified time, the crystal is moved into a reaction chamber 3. The crystal is exposed to InCl for five seconds and the InCl is absorbed. Then the crystal 6 is returned into the reaction chamber 5. The surface is exposed to an H<sub>2</sub>Se atmosphere for five seconds. The crystal 6 is moved into the reaction chamber 3. This cycle is repeated by several tens of times. The movement of crystals 6 is repeated in the sequence of InCl-AsH<sub>3</sub>-GaCl-AsH<sub>3</sub>. A GaAs/InAs regular mixed crystal having high resistance is grown. Then a non-doped GaAs/InAs regular mixed crystal is grown. Thus the high quality regular mixed crystals and a superlattice structure can be grown.



### LEGAL STATUS

[Date of request for examination]

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of appeal against examiner's decision of rejection]

[Date of requesting appeal against examiner's decision of rejection]

[Date of extinction of right]